PATENT CLAIMS

1. A device (100; 200) for the detection of a fluorescent dye (F) in a sample (P), comprising:

   a radiation source means (110; 210) with the aid of which light for exciting the fluorescent dye (F) to be detected can be transmitted into the sample (P) applied to a carrier (140; 240), and

   a detecting means (120; 220) for detecting fluorescent light which has been emitted by the fluorescent dye (F) to be detected,

   characterized by

   a hollow space (130; 230) having an internal high-reflectance surface (131; 231), a first aperture (132; 232) directed towards the sample, and a second aperture (133; 233) located opposite the detecting means (120; 220).

2. A device according to claim 1, wherein the hollow space (130; 230) has a substantially spherical shape.

3. A device according to one of the preceding claims, wherein the high-reflectance surface (131; 231) consists of barium sulfate or spectralon.

4. A device according to one of the preceding claims, wherein the radiation source means (110; 210) emits monochromatic light.

5. A device according to claim 4, wherein the monochromatic light is laser light.

6. A device according to one of the preceding claims, wherein a beam forming means, especially a beam expansion means (250), is provided after the radiation source means (210).

7. A device according to one of the preceding claims, wherein the radiation source means (210) and the carrier (240) have provided between them a scanning means (260) with the aid of which rays emitted by the radiation source can be guided over the carrier.

8. A device according to claim 7, wherein said scanning means (260) comprises a focusing lens system for focusing the rays emitted by the radiation source onto the sample (P).

9. A device according to claim 8, wherein said focusing lens system comprises an F/θ lens.

10. A device according to one of the preceding claims, wherein a beam divider (270) is provided in such a way that, by means of said beam divider (270), part of the light emitted by the radiation source means (210) can be directed onto the sample (P) and part of the fluorescent light emitted by the fluorescent dye (F) to be detected can be conducted into the hollow space (230).

11. A device according to claim 10, wherein the beam divider (270) is provided in the form of a dichroic beam divider.

12. A device according to one of the preceding claims, wherein at least one further detecting means (221, 222) and a complementary aperture (234, 235) located opposite each of said further detecting means are provided in the hollow space (230).

13. A device according to claim 12, wherein at least one further detecting means (221, 222) is provided for detecting fluorescent light which has been emitted by the fluorescent dye (F) to be detected and the wavelength of which differs

from the fluorescent light which is to be detected by the detecting means (220).

14. A device according to claim 12 or 13, wherein said at least one further detecting means (221, 222) is provided for detecting at least one further fluorescent dye (F') at the same time.

15. A device according to one of the preceding claims, wherein each detecting means (120; 220, 221, 222) is arranged in the respective complementary second aperture (133; 233, 234, 235) in the hollow space (130; 230) in a light-tight arrangement.

16. A device according to one of the preceding claims, wherein each detecting means (120; 220, 221, 222) is provided with a photomultiplier means.

17. A device according to claim 16, wherein each detecting means (120; 220, 221, 222) is provided with a colour filter means which is adapted to the wavelength of the fluorescent light to be detected by said colour filter means.

18. A device according to one of the preceding claims, wherein each detecting means (120; 220, 221, 222) is provided with a collimator lens.

19. A device according to one of the preceding claims, wherein, in front of the first aperture of the hollow space, a blocking filter device (280) is provided, which is opaque to the light used for excitation and which transmits the fluorescent light to be detected.

20. A device according to claim 19, wherein the blocking filter device (280) is provided with an interference filter and/or an absorbing filter.